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ABSTRACT

The purpose of this teacher resource paper is to assist preschool teachers in (1) interpreting the interactions of children in terms of educational growth, (2) insuring that planned interactions will stimulate growth related to program goals, and (3) developing realistic expectations of children. Three topics are discussed. In Topic A the reader is introduced to the notion that, while children have individual growth patterns, there are consistencies in the learning process which can be observed and which can serve as a basis for analyzing sequences in educational growth. The object of teaching when working with individual children, matching educational experiences to child interests and abilities, is the next topic (B) for discussion. In Topic B, readers are offered suggestions for observing and analyzing growth. Topic C provides information about different approaches to planning for sequence in educational growth in order to clarify thinking about the open framework approach to sequence. The appendix explores the parameters of the following growth areas: acting independently, problem solving, social communication and self-expression. (Author/RH)

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OPEN FRAMEWORK

RESOURCE KIT

SECTION 3

DISCUSSION PAPER

WORKING WITH INDIVIDUALS

Observing, Analysing and Planning for Educational Growth

June 1979

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PREFACE

The aim in this section is to try to help you find answers to questions such as these:

- how do I interpret the interactions of children in terms of educational growth?
- how can I make sure the interactions I plan will stimulate the kind of growth expected in this program?
- what are realistic expectations to have of a child in this program?

Whilst Section 2 offers details of a range of possible interactions with space, time, materials and activities, Section 3 is concerned with providing a basis for selecting appropriate interactions by helping you use observation and analysis better.

It is hoped also that the material in this section will stimulate you to develop guides for observing and analysing sequence in educational growth.

Such guides should create harmony between the child and the knowledge and skills to be learned, and between the processes the child engages in and the outcomes expected from the program. A balance between each of these concerns is incorporated in the notion of education growth as it is used in this approach to programming.

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"The paradox of the open classroom is that it combines clear notions of curriculum, hence careful advance planning, with a great deal of day-to-day and even week-to-week flexibility and spontaneity. A teacher must have clear goals and plans of her own, but must leave room in those plans for the children's goals, and she must be ready to modify her own plans on the basis of the children's activities and responses. While the goals are clear and laid down in advance, the path of those goals is completely unpredictable". C. Silberman, The Open Classroom Reader, p 486.

INTRODUCTION

"Careful advance planning" in the open framework approach to programming would refer to the attention given to organising an environment that promotes the achievement of program goals. By establishing such an environment children are constantly encouraged to interact with materials and people in ways that encourage educational growth, whilst the teacher has time to devote to observing, analysing and planning for individual children. Teacher activity revolves around matching what are called "educational experiences" (experiences that encourage growth in terms of the goals of the program) with child interests and abilities. As this matching activity involves both child initiative and teacher initiative, flexibility and spontaneity are certainly as characteristic of the program as is careful advance planning.

Basic to the programming sequence of establishing a facilitating environment then working with individuals within that environment, are the following assumptions:-

- *the learner acts with purpose*
- *the environment exerts pressure on this active learner*
- *learning is the outcome of interaction between a learner and an environment*
- *educating involves the intention to learn something that is of value to both the teacher and the child*
- *the educational environment encourages learnings that are valued by both teacher and child.* (1)

Further, the assumption is made that all children have individual patterns of growth.(2) The teacher's role then is one of identifying individual progress and making changes to the environment that seek to stimulate further growth, through matching planned experiences with individual interests and abilities. Sometimes these experiences will involve teacher direction in a large group situation, sometimes they may be suited for introducing as a small group activity, often they will be planned with one or two individuals in mind. They may involve interactions with adults, with peers, with materials or with some aspect of space or time. Always the teacher will ensure that a variety of appropriate types of interaction are planned for, so that individual children are able to seek out those best suited to their interests and abilities at a particular time.

By providing for a variety of appropriate experiences the teacher is taking into account spurts and plateaux in individual growth allowing the child to consolidate previous learning, practise new skills, investigate promising ideas, experiment with materials and so on. It is not considered efficient to try to ensure that all children progress through the same range of interactions with materials, people and ideas to achieve educational growth. A more effective and efficient way to ensure educational growth involves the teacher getting to know each child as a person with a range of likes and dislikes, hopes and fears; that is, a person with interest and abilities, some of which are developmental, and others which are unique to the child, and planning a variety of potentially challenging interactions, some of which will engage the child in a search for increased mastery.

In Topic A the reader is introduced to the notion that, whilst children have individual growth patterns, there are consistencies in the learning process which can be observed and which can serve as a basis for analysing sequence in educational growth.

The object of teaching when working with individual children, matching educational experiences to child interests and abilities, is the next topic for discussion. In Topic B, readers are offered suggestions for observing and analysing growth.

Topic C provides information about different approaches to planning for sequence in educational growth in order to clarify thinking about the open framework approach to sequence.

The appendix explores the parameters of the following growth areas: acting independently, problem solving, social communication and self-expression.

TOPIC A: LEARNING

IN THIS SECTION THE READER IS INTRODUCED TO THE NOTION THAT, WHILST CHILDREN DISPLAY VERY INDIVIDUAL GROWTH PATTERNS, THERE ARE CONSISTENCIES IN THE LEARNING PROCESS WHICH CAN BE OBSERVED AND WHICH CAN SERVE AS A BASIS FOR ANALYSING SEQUENCE IN EDUCATIONAL GROWTH.

In an open framework program -

. the child's search for satisfaction and mastery,

. takes him through cycles of exploring, practising, testing, and discovering,

. in ways characteristic of his developmental level,

following a broad sequence in growth in the areas established for the program.

As the child searches for satisfaction and mastery, using the repertoire of interactions that characterise that child, he can be observed moving through cycles of exploring, practising and testing skills needed to proceed, then setting out to discover on the basis of the newly-acquired abilities. Whilst this cycle can be observed in learners of all ages, the 4 to 8 year old will display characteristics in the way they move, relate to others and think about the problems encountered, that indicate that there are similarities amongst learners when they are at similar stages in their development.

So we have here a picture of 4 to 8 year old children, who display similarities and differences. They all display a tendency to search for satisfaction and mastery, a tendency to move through cycles of exploring, mastering skills, then applying new skills to discovering, and they all move through stages of development, the qualitative aspects of which can be predicted. Conversely, each has his own repertoire of ways for interacting to achieve satisfaction and mastery.

A search for satisfaction and mastery

Learning is the result of interaction between learner and environment, when knowledge, skills and attitudes are developed. The learner has been characterised thus:

"(i) the learner interacts with purpose;

(ii) the learner acts as a whole person;

(iii) the learner builds on past experiences;

(iv) the learner develops characteristic modes for interacting, on the basis of past experiences;

(v) the learner needs to establish reciprocal communication patterns with caring people;

(vi) the learner is susceptible to social expectations;

(vii) the learner develops personal expectations;

(viii) the learner is a unique human being". (3)

What particular knowledge, skills and attitudes a child acquires, is a product of both learner characteristics - the repertoire of interactions he uses - and environment characteristics - the space, time, materials, activities and people that the child encounters. In the open framework approach to programming careful attention is given to the organisation of all these aspects of the educational environment. The environment can, then, be expected to exert similar pressures to achieve educational growth on all children through providing ample variety to allow for individual abilities and interests. Each child who comes into this educational environment will seek to interact with aspects of it that bring personal satisfaction and mastery.

The teacher's concern is for the child to achieve satisfaction and mastery whilst also achieving growth in the areas defined for the program, so she will need information about the repertoire of interactions that characterise each child. Observations of the special abilities that each child possesses, knowledge of the expectations he has of the program, and of the past experiences that influence his present style of interaction, are all sources of data.(4)

By analysing such data, together with information about the aspect of the learning process that is presently engaging the child, and the developmental level the child has achieved, the teacher is able to make necessary additions or other changes to the environment to stimulate educational growth.

SEARCHING FOR SATISFACTION AND MASTERY

Debbie (4 yrs 5 mo.) went to the collage area, then began looking on the pasting trolley. She began sifting through cardboard boxes and when she came to the egg cartons she lifted out each one (all lids – *not* complete boxes) studied them, then put them back. She came to T. and said "I need an egg thing – with bumps". T. and Debbie went and looked in the storeroom, then in the other unit – where T. selected 8 complete egg cartons. Debbie said "I want the green one" – which she took back to the collage area and put on the table. She then selected 2 yellow straws, a pair of scissors and a ball of wool. She cut the lid off the box and put it on the pasting trolley. She then began pushing and poking the point of the scissors into an end of the egg carton – she did this repeatedly – then came to T. and said "Can you put the holes in for me?" T. pushed the holes in where Debbie had been trying. Debbie then pushed both straws into the holes and started trying to make a hole between the 2 holes T. had made – she used the same method with scissor blades closed that she had used the first time – then she opened the scissor blades and pushed one in to make the hole as T. had showed her.

She then cut a piece of wool, threaded it through the hole, and asked T. to tie a knot.

Debbie then put the "egg carton" on the floor, pulled it by the string and said "Come on Snail". (A *SNAIL*!)

. . . . . .

John (5 yr. 0 mo.) went to the collage area – he began sifting through the cardboard boxes on the trolley. He selected the lid of an egg carton, then put it back – he then selected the base (bumpy part) of an egg carton. He took a large piece of paper off the trolley as well and put these things together on the table. He then took the wallpaper glue and began pasting the bottoms of the egg carton (upside down on the table). He took the large piece of paper and put it on the egg carton so it stuck by the bottom of the carton. He picked it up rather quickly and the paper blew off the egg carton. T. suggested at this point that the glue may not have been strong enough. John then took some wood glue off the trolley, put the egg carton and the paper on the table and went over the top of the wallpaper glue with wood glue. He then put the paper on top – pressed each section onto the paper and carried it slowly to the drying area.

. . . . . .

Year 1 Class Activity: ball handling skills.

The teacher had made equipment by cutting out side and bottom sections of two litre plastic bottles to make a scoop for catching balls made out of tightly rolled and sewn pantyhose. The teacher started children working in pairs, throwing and catching the balls.

Observation No child was willing to part with either item of equipment to co-operate with a partner, but continued practising individually.

Analysis The material provided was matched exactly to their level of development providing a challenge and a possibility of mastery. However, children wanted to practise their skill before engaging in co-operative play.

Planning The teacher organised some mothers to make more material and allowed children to work individually until further observation suggested the next step of working with partners.

Cycles in learning

It has been suggested that an environment organised to maximise growth in the directions desired for the program, would encourage the following types of interaction:

> *"(i) Play: because play is activity engaged in with great intensity, involving the child cognitively, emotionally and physically, it is a powerful medium for learning.*
>
> *(ii) Experiment: this is a form of behaviour which is not universally exhibited but which can be fostered in a facilitating environment which capitalises on the curiosity young children so often display.*
>
> *(iii) Repetition: observations suggest that children consolidate learnings that have interested them through repeating them. This can be easily observed in the learning of skills involving physical activity. The same behaviour is exhibited for other types of learning also.*
>
> *(iv) Communication: young children devote considerable time to communicating socially, in order to understand others and be understood by them, and about their own ideas and concerns, through such activities as constructing, drawing, singing, speaking and writing.*
>
> *(v) Sensory input: children learn through becoming actively engaged with some aspect of the environment. Although young children tend to interact in a global way, employing plenty of physical activity, they also learn when still. Active learning is not to be equated with physical activity alone, but also with the active engagement of the child's mind and emotions. Children learn by watching, listening, feeling, smelling, tasting as well as through gross body movement, and teachers can stimulate learning through all these senses".* (5)

These types of interaction can be related to different phases in the learning cycles that children can be said to move through in their search for satisfaction and mastery. Children are sometimes exploring new situations in a generalised way accommodating to the unexpected, unusual and exciting at the frontiers of what is known to them. Sometimes the accommodatory process can lead back from the frontiers to a gathering of information, busily feeling, smelling, tasting, listening and questioning. At other times children eagerly repeat a new physical, social or cognitive skill or a new piece of information in a variety of ways, then test it out in different situations until it has become a part of them. This could be called an assimilatory period when they are consolidating their competencies, achieving equilibrium. There is a temptation amongst teachers, and parents too, to consider this part of the cycle where the child is testing out ideas, perhaps reverting to re-learning or re-examining for a time then testing, again, as wasteful. Yet Hodgkin (6) calls this activity "play", and as such

he considers it to be an essential part of learning for without play, without the time of freedom to develop equilibrium, the child may never consolidate the competencies gained, may never have them fully integrated into their whole functioning cognitive, affective, and physical system so that they can be used when the child ventures forth to discover at the frontiers of what is unknown in the environment. Figure 1 illustrates the cyclical process of learning described here.

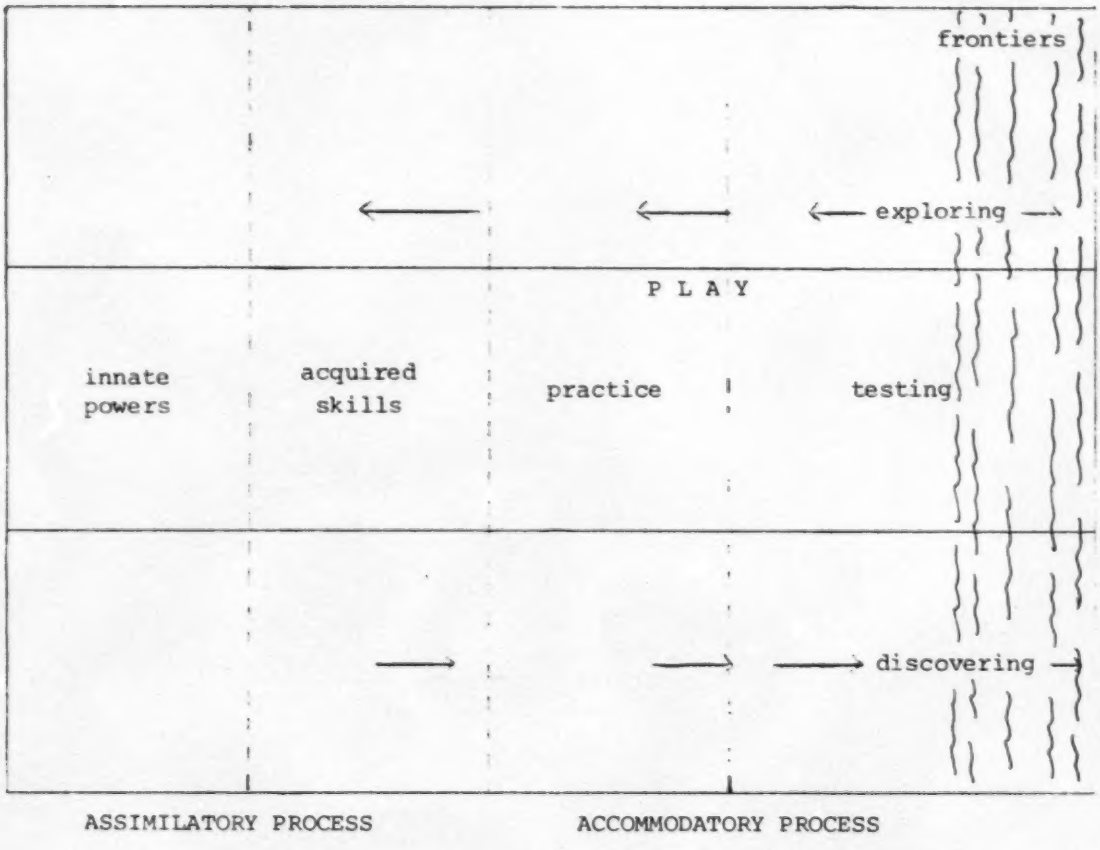


Figure 1: adapted from Hodgkin, R.A. p 116.

Observation and analysis by the teacher will help her make inferences about where the child is in this cyclical process, and whether she considers it most useful to draw the child towards discovery, towards acquiring the skills and knowledge which are necessary to engage in "discovery", to play with his new abilities or whether he is at the point in the cycle where he needs to explore randomly, investigating all aspects of some new material or idea.

EXPERIMENTING, TESTING, PRACTISING, DISCOVERING

1. *Daniel* (5 yr. 2 mo. at the experimenting phase) went to the puzzle table and sat down at the place where there was a fairly simple wooden insert car puzzle. He took out 1 car by the "peg" and drove it round the edge of the puzzle until the car was in an upright position balanced on its wooden base. He did this with the 10 pieces in the puzzle until all were standing around the puzzle on the table. He then took a car and tried it in a place – it was a similar size to the piece he was holding but a very different shape. As it did not fit he randomly tried it in each place, trying to force it sometimes and then "giving up". He put it down and tried another piece – he did the same random placing, but after several attempts got the piece in the puzzle. He then took another piece and tried to fit it in a place of similar size but *not* shape. He then, it appeared, began at random to try most of the places until it fitted. He completed the puzzle in this way – the last pieces more quickly than the first, it seemed, because there was less choice.

2. *Tracy* (5 yr. 2 mo. ready to practise skills already learned) chose a puzzle in a box with the completed picture on the lid. She removed the lid and then took the puzzle out – spreading the pieces evenly on the table beside her. She put the lid of the box on the table in front of her.

   She took a corner piece of the puzzle and put it down the bottom – she then looked over the pieces of puzzle in front of her and chose a piece with the same colours as the corner piece – she joined these – she continued in this way until she had about half the puzzle in the box. All the time she seemed to be not at all aware of the picture on the lid of the box – she didn't look at it or study it once.

   She then came to a section of the puzzle where there were similar colours on the top of the puzzle and the middle – she tried to fit pieces from the top onto the middle – she tried several in this way. T. suggested she try matching a particular piece with the picture to be exactly sure of the colours. She did this and then proceeded to finish the puzzle – she was unsure again of another piece and used T.'s suggestion again.

3. Watched Mary (6 yr. 4 mo.) select two or three objects – buttons, beads, balls etcetera from any amount. Does she take one, say one, then another, and say two etcetera. If she cannot sweep 2 or 3 across she needs more work in making patterns, with numbers, making sets using the property of number. She may even need more experience making sets using properties other than number.

4. *Grant* (6 yr. 3 mo.) spent much time doing a large colourful painting using many colours with great gusto. Teacher moved away to another group of children. When she returned, Grant had discovered the richness and covering properties of black and was busily covering his entire painting with black.

   Analysis: Grant is still more interested in exploring and manipulating the properties of materials than in representing.

Developmental characteristics

The child aged 4 to 8 years, according to Piaget, is acting at the pre-operational intuitive stage where he is particularly interested in exploring the world, making best guesses about why it functions as it does. He is also at a stage of rapid physical development, where muscle development continually allows him to accomplish new physical skills. He is beginning too, to widen his social world with the introduction of school and hobby associations.

This young child then is very often exploring at the frontiers of his knowledge and skill. He will return from the frontier briefly, to consolidate abilities through acquiring, practicing and testing skills, but he will soon be off again to discover on the basis of what he knows.

By being aware of the kinds of behaviour which are associated with a certain stage of development, the teacher is in a position to take an initiating role, not in planning activities for the child to do, but in utilising a child's own initiatives in a way which broadens control over the environment. For instance, Hunt[7] suggests that the following types of interaction would be most characteristic of children during the early years of cognitive development:-

At the sensori-motor stage of development children take every possible opportunity to experiment with new-found motor skills. During the pre-conceptual phase children like to imitate through play, aspects of the social world that interest them. Their play is greatly enriched by the availability of a variety of models for imitating. The child at the intuitive phase of development, approximately ages 4 to 7 years, is continually attempting to bring his intuitions into correspondence with reality, by asking questions and by engaging in a variety of interactions with people and things. When children are moving into the concrete operations phase, Hunt suggests that they will benefit from a laboratory situation where there is ample opportunity to explore cause and effect relationships.

The High/Scope Educational Research Foundation[8] has also looked at the implications of Piaget's ideas about cognitive development and the development of ways of knowing about self and the world. They have devised for teachers a series of interactions with the environment, which they call 'key experiences' for optimum cognitive development during the pre-operational and intuitive stages of development. These key experiences are ordered under the following curriculum areas: active learning, language, experiencing and representing, classification, seriation, number, spatial relations and time. For children operating at the concrete stage of development, the Foundation orders the program key experiences under the following areas:

(1) Modes of learning - action, representation, language.

(2) Relationship areas - classification, seriation, number and measurement, space, time, causality.

(3) Content areas - art, play and drama, construction, sewing, music, movement, media, social studies, science.

Havighurst[9] has undertaken a similar exercise, working from the personality stage theory of Erik Erikson. Erikson postulates that man moves through eight stages within which there is a central crisis to be resolved. Both internal forces and environmental forces play their part in the manner in which each crisis is resolved. For the teacher of young children the conflicts between trust and mistrust, autonomy and shame, initiative and guilt and industry and inferiority are the most relevant. What Havighurst has evolved is a series of developmental tasks which he feels children must engage in at particular stages in their development to satisfactorily resolve the conflicts and proceed to develop a healthy personality.

During the years 4 to 8 it can be noted that children are likely to be involved in conflict between displaying initiative and suffering guilt when that initiative leads to unhappy results, and industriously pursuing new areas of mastery if environmental experiences ensure that this industry leads to achievement. Failure can lead to a sense of inferiority.

Knowledge of child development can help the teacher to predict the types of interaction that the children in her program will most frequently engage in, however, this knowledge alone is not enough. It merely indicates in broad terms the developmental sequence that all children will pass through. As well as using knowledge of child development, teachers need to be able to utilise knowledge of the cycles in learning that children move through, and information about the repertoire of interactions that each individual child favours.

Sequence in educational growth

The view of the child featured in this series of verbal snapshots is that he learns about the world in a highly individualistic way, though consistencies can be noted in his personal style of interaction, in development, and in the learning process. In his search for satisfaction and mastery the child can be observed moving through cycles where he is sometimes concerned with acquiring simple skills and practicing these, at other times he is making major leaps in observable ability on the basis of discovering some new relationships. This cyclical nature of learning can sometimes give the appearance of plateaux where the child does not appear to be advancing, and spurts where growth is rapid with the child learning at a range of levels of complexity all at once.

Marie Clay[10] describes this characteristic in the growth of reading ability:

"Observations of children suggest that they do not learn about language on any one level of origination before they manipulate units at higher levels ... As the child learns to write, there is a rich intermingling of language learning across levels".

In an open framework program, the environment is organised to maximise opportunities for educational growth as these are defined in the goals of the program. Different programs stress different aspects of growth at different times.

Marie Clay on the basis of many observations of first year pupils in New Zealand primary schools, was able to isolate the following sequence that children moved through as they developed the ability to write in a child initiative/teacher initiative classroom:

- drew pictures and the teacher wrote dictated captions
- traced over the teacher's script
- copied captions
- copied words around the room
- remembered word forms, and wrote them independently
- invented (generated) word forms, often correctly
- got a written copy of unknown words from the teacher.

It is possible to describe the sequential accumulation of skills under different methods and programs. Teachers may find the preceding portrayal of consistencies in learning and development of help to them when they begin to look for broad patterns or sequences in the growth areas they choose for their open framework programs.

We turn now to an examination of the teacher activity which underlies the success of any attempt to establish a program where child initiative and teacher initiative are equally valued and where children achieve educational growth.

TOPIC B: TEACHING

Matching Educational Experiences With Child Interests and Abilities

"The child, as initiator of experiences within the environment established by a teacher, will select those that are appropriate to his developmental level and modes for interacting.

The teacher, as initiator of experiences, is concerned with facilitating 'educational growth'; that is 'growth' in directions laid down by the values and goals of the program. Educational intentions then, are plans for experiences which the teacher considers will contribute to educational growth in a child. Such plans are made on the basis of professional expertise both in observing and interpreting child behaviour, and in sequencing to provide for continual challenge, satisfaction and mastery in the child".(11)

Complete matching for every child is an ideal that can never be achieved in practice. However, if we are convinced that it is worthwhile as an aim to strive towards, then it is worth bothering to see what can lead, within the facilitating environment, to improved matching.

This will involve using

- information about the interests and abilities of the child which are relevant to the program,
- knowledge of learning processes and the relevancy of these to sequence in growth,
- knowledge of stages in development,
- knowledge of a range of possible key educational experiences that will foster further growth.

The process of matching, even when all this information is at hand, is still an uncertain one.

During the August holidays, two children moved house and came back to pre-school full of interest in and information about building materials, structural parts of houses, rooms, and soon after some discussion and exchange of ideas, teacher and children decided to make an egg carton house. The construction work continued for two weeks and, with walls, windows and doors completed, it was decided that the inside walls should be prepared.

During the course of one morning the teacher interacted with many children who came to work on the activity. The following accounts indicate the different growth areas stressed by the teacher in her interaction with each of four children.

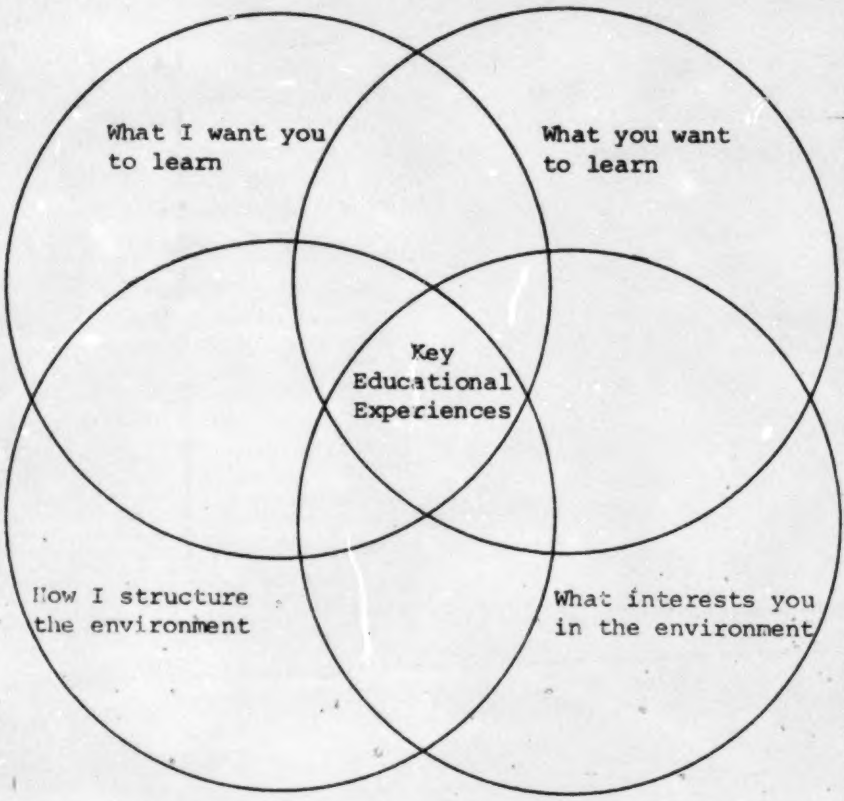
DARREN (4.8)

OBSERVATION: Joined in, splashed paste around, slapped sheets of wallpaper on at tipsy angles, one over the top of the other, chatting happily, smiling all the time. I asked him to make sure his sheets were stuck on (they had immediately begun to slide off). I then approved heartily of the result and let him move on to bring his twin brother to approve of his work.

ANALYSIS: Darren had shown himself to be socially immature, depending on his brother for support. Just recently he had begun to approach activities on his own.

This was a good opportunity to provide happy social communication with an adult.

Darren experienced happy social interaction leaving him with a positive feeling of self worth.


What I want you to learn
What you want to learn
Key Educational Experiences
How I structure the environment
What interests you in the environment

It is not simply a matter of applying a formula. It is a strategy for finding out how best to cater for the individual characteristics of children so that their experiences build upon and extend their present ideas and abilities.

This strategy involves the teacher in a process of observing the child during interaction, analysing his behaviour, then planning for key educational experiences that foster growth in an area of concern to the program.

. OBSERVE THE CHILD INTERACTING

. ANALYSE THE INFORMATION IN TERMS OF EDUCATIONAL GROWTH

. PLAN FOR EXPERIENCES THAT STIMULATE EDUCATIONAL GROWTH

SCOTT (4.8)

OBSERVATION: Sidled up to the house, watched but when invited to join in, refused. When invited again he said he didn't know how. When teacher offered help he put on an apron and came into the house. With much teacher encouragement and praise, he stayed for a few minutes and stuck on one piece of wallpaper.

ANALYSIS: Scott had avoided using his hands for many manipulative activities as his fine motor control was poorly developed. The large brushes, large pieces of paper and messy work situation gave Scott a chance to use his hands with success.

Scott made a useful contribution to the group project, gained satisfaction and attempted to master a new skill.

LORENE (5.2)

OBSERVATION: Came ready in apron and decided to do "that piece beside the window". She stuck on a large piece of wallpaper so that one end overlapped the window. When teacher commented on this and asked Lorene what she could do about it Lorene fetched a pair of scissors and trimmed paper off to line with window edge.

ANALYSIS: Lorene has been observed to have good spatial understanding with collage and blocks and very keen visual perception skills – she remembers people's clothes, makes observations on people's emotions from facial expressions. However, she dislikes moving into new areas unless very clearly defined limits are explained to her. The unknown scares her. On the basis of known skills, she could be extended to a measuring task but I felt that this would undermine her confidence in knowing that she is in control of her actions and possible learnings.

Lorene was satisfied that her paper was "a good fit". I feel further developing of spatial awareness needs to be done so that Lorene knows what to expect of herself and the activity.

BRENDAN (5.6)

OBSERVATION: Came quietly up and asked if he could help. When asked which part he would like to do, Brendan replied that he didn't care. Teacher suggested that he do the remaining space between the window and the door. He commented that he would have to get a piece of paper the right size. When I asked how he would do that, he did not know. The teacher then brought in a stick and showed Brendan how to transfer the length of the space to the piece of paper. He marked off the paper and cut it out.

ANALYSIS: Brendan has shown well-developed ability in understanding mathematical relationships: for instance use of size and space relationships with blocks; commented that he'd have 1½ biscuits left out of four if he ate 2½; shared 16 cars out amongst 4 boys saying that having 4 each made them equal; made repeated attempts over a period of days to solve particular problems.

Now we would see what he could do with a measuring task.

Brendan gained a new skill and an understanding of the useful, practical purposes to which measuring can be put.

About Observing

What do we observe? Observing 'growth' means that you are focussing on a stream of child behaviour, on a child using physical, cognitive and socio-emotional abilities to interact with some aspect of the environment. In observing, the teacher takes in the whole situation and the ways that each aspect of the child's behaviour contributes to the present level of competency in a growth area. At the point of observing the child is seen as a whole person interacting to achieve satisfaction and/or mastery.

How do I observe educational growth?

- observe the child in a variety of situations, looking at his ability to achieve satisfaction and mastery from the experiences he chooses to engage in.
- note the interactions he chooses, to gain some insight into what type of experiences he is pursuing to achieve satisfaction/mastery – exploring, practicing, testing, discovering.
- note his successes and failures, to gain some idea about his present level of growth.

What records are needed?

Records must be related to the growth areas of the program. Whilst anecdotes about happenings of general interest can be profitably analysed if you have enough time, it is best to start recording by noting only behaviour that you know is related in some way to the growth areas that form your program goals. The appendix offers one way of describing growth areas.

Observational data could include short anecdotal records, accurately describing an interactional sequence; examples of children's work; language; movement; photographs and tape-recordings of really significant signs of growth or of some aspect of development that puzzles you. (Check-lists you have devised to suit the growth areas of your program, and occasional use of standardised tests or surveys to ensure that no child is performing below accepted minimal competency levels for our community, could be part of the overall evaluation program, but are not part of the ongoing observe, analyse, plan process teachers use in their day-to-day work with individual children).

How much to record?

This is a matter of teacher style, and of the teacher's present level of development. Take only as much information as you are presently able to use. In the open framework program, it is the use of observational data that matters not the way you write it down, nor how much is written.

Make the records as accurate (objective) as possible. Leave your personal opinions about deficiencies and assets for the analysis stage.

About Analysing

When you come to analysing the observations you have made - the images and ideas you hold in your head as well as the data you have in front of you - you must be clear about what you are looking for.

Use the statements you have made about growth areas as your major reference. For instance, if you intend to focus first of all on growth in problem solving, assemble all the material that you think is related to that growth area. At your first observation establish a base-line - some key characteristics.

- instances that have been problems for this child
- how he has interacted in the problem-solving situation
- particular techniques he has used that succeeded
- particular techniques he has used that failed
- the types of problems he seeks to engage in
- the types of problems he seeks to avoid
- the physical, cognitive and psycho-motor skills he has brought to bear on the situation.

Having established a profile of the child relate this information to what you know about such things as the child's past experiences, enduring interests, learning styles, development level, and present concerns in learning, for instance practising, testing or discovering.

It is at this stage, not at the data-gathering stage, that the teacher focusses on specific aspects of the child's functioning. The analysis involves focussing firstly on the child's characteristic ways of interacting, then his developmental level. Further analysis into specific skill areas may be necessary to understand more fully the observations made.

Sometimes the analysis will be made during the ongoing stream of behaviour in which the teacher is involved. Asking questions that arouse curiosity or suggest a new way of attacking a problem are methods used by the skilful teacher as part of the matching process. Here the analysis is split-second, almost intuitive. At other times the analysis may be undertaken away from the situation, when the teacher has time to think through the various observations that have been made. Sometimes the analysis is undertaken at a planning meeting with all the staff.

Once an analysis of the child's educational growth has been made, decisions must be made about how to stimulate further growth.

About Planning

It may be that the profile suggests a need to provide activities that stimulate the practicing of physical, cognitive and social skills that militate against success in the types of problem-solving situations the child seeks out; it may be that it suggests the need to provide more of the same type of experience because the child seems to be actively seeking mastery at this stage rather than wanting to discover new worlds; it may be necessary to observe again to try to find out more about why he fails in some situations and not in others.

Whilst at the analysing stage, the teacher may choose to focus on discrete aspects of behaviour, when she comes to planning for suitable experiences, she is again viewing the child as a whole being interacting with purposes within this environment she has structured. This ability to observe the child interacting, then limit any fragmenting of the ongoing nature of learning to the analytic process used to determine the child's level of development, special abilities and present concerns is central to the open framework approach to working with individuals.

Planning a match between educational experiences and child interests and abilities involves the teacher in organising a particular selection of interactions with materials, people and ideas, which observations and analyses suggest will stimulate further growth.

At this stage teachers may want to turn to resource materials that offer plenty of ideas from which to select appropriate interactions. A range of suitable resources are suggested in Section 2. For this individualised aspect of planning, those resources where the suggested materials, activities and interactions with people are developmentally sequenced, may be the most useful: some examples are:

Nuffield 5/13 Series

High/Scope Educational Research Foundation - Key Experiences

It should be remembered that developmentally sequenced resource materials may aid decision-making but they cannot form a substitute for observing and analysing individual growth, and they are not a substitute for guides which indicate, in broad terms, the sequence in educational growth that a child can be expected to follow in a particular program.

TOPIC C: DEVELOPING GUIDES FOR OBSERVING AND ANALYSIS SEQUENCE IN EDUCATIONAL GROWTH

1. Guides to Broad Sequences in Educational Growth:

Most resources for program planning available to teachers of children aged 4 to 8 years have a different focus from the central concern here. One notable exception would be the publication "What Did I Write?" by Marie Clay[12] where the focus is on observing and analysing growth in writing behaviour. On the basis of extensive observation and analysis this author is able to indicate the broad sequences that children move through in learning to write within a child initiative/teacher initiative program. It is hoped that teachers will be motivated by this present document to build up data about the children progressing through their program, from which they will be able to work out broad sequences in the growth areas they are planning for in their child initiative/teacher initiative programs.

For those who have established programs which encourage growth in the areas of problem-solving, acting independently, social communication and self-expression, the exploration of the parameters of these growth areas in the appendix may be of assistance.

2. Sequence and Program Development:

Approaches to organising a school program can incorporate widely-varying ideas about the focus in sequencing. There are those who see guides to sequence as irrelevant, who believe the teacher should focus on child interest, and on planning experiences that build upon individual interests. This might be termed a child initiative/teacher response program. Others see dangers in what they see as misplaced over-emphasis on child interest. For instance, Piaget indicated a need to develop some type of guide to sequencing after observing a program that catered for child interests, where the child appeared to be left all responsibility for determining directions, acquiring skills, and discovering as well as more randomly exploring.

> *"And indeed, in the little Malting House School in Cambridge, Mrs Isaacs and her collaborators did in fact abstain rigorously from all adult intervention, on the theory that it is precisely adult instruction and its clumsy mistakes that prevent children from working. What they did do was to present their pupils with what amounted to a genuine, fully-equipped laboratory so that they could then be left to organise their experiments themselves. The children, ranging from three to eight years in age, had the greatest possible number of raw materials and instruments at their disposal: test tubes, boiling tubes, Bunsen burners, etc., not to mention all the apparatus for natural history study. The results were by no means without interest, the children, even at that early age, did not remain inactive in this environment so well equipped for research, but undertook all sorts of manipulations that were evidently of passionate interest to them, they were really*

learning to observe and to reason as they observed, both individually and in common. But the impression that my visit to this astonishing experimental school made upon me was twofold. On the one hand, even these exceptionally favourable circumstances were insufficient to erase the various features of the child's mental structure ... On the other hand, some form of systematization applied by the adult would perhaps not have been wholly harmful to the pupils". (13)

Another movement in program development that tends to de-emphasise sequence, places the emphasis on analysing the child using some previously devised check-list or test, isolating the areas where the child's performance is below average, then devising strategies for eliminating deficiencies.

Although the intention here is commendable, for it is hoped that any educational program would wish to ensure that all children attain minimum competency standards, a tendency to focus on parts rather than on the whole, to fragment the view of the child, is too often associated with this movement. As Dorothy Cohen indicates below this tendency to focus on parts rather than the child functioning as a person, can often be associated with attempts by other professionals to impose their perspective of the child onto the teacher.

"The man to whom I took this child was a well-known expert in his field, but he treated this scared child with such brusqueness that I finally moved to write him at one point and say, 'If you only gave to this child the regard which you give his tonsil, the whole experience would be so much easier for him and for me'. The doctor thought I was out of my mind, but it is his kind of narrowness that I am talking about. People from other disciplines who look at children somehow see only a tonsil, or they may see only a computer in the image of a brain or a brain in the image of a computer. But we who work with children know that every single part of them is important and that all parts are interdependent. With this in mind, let's get on to what is basic in the life of a young child and forget for a minute about the emphasis on 'will they learn all their shapes this year?', 'will they learn all their letters?'"(14)

For many teachers, the idea of educating carries with it the notion that the teacher has some responsibility for determining program goals and for offering children assistance in their quest for satisfaction and mastery. In accepting this responsibility the teacher very often looks for guidance to ensure that there is some sequence in the program they offer.

Many attempts to provide that sequence have focussed on societal priorities, on daily living skills needed for competent functioning in a particular social situation, and on subject-matter that is considered necessary for children to know. Attending these priorities have been a range of ideas about the best ways to sequence the skills or knowledge.

Some of these ideas will be discussed here:-

a) A number of the early childhood programs developed as part of Head Start and Follow-Through projects in the United States have focussed on developing the skills necessary for successful functioning in a formal classroom by selecting complex learning tasks and breaking these down into a series of simple, sequential steps to be taught to the child. This is an approach that is strongly influenced by the learning theories of behavourist psychologists, notably Skinner. One example of this type of programming is Nimnicht's Responsive Curriculum[15] where teachers are provided with a series of 'learning episodes' designed to develop in pre-school children a positive self-concept and the cognitive skills associated with sensory and perceptual acuity, language, concept formation and problem-solving. More extreme examples of this learning theory approach to sequencing, include the Bereiter and Engelmann pre-school program and the related Distar programs for primary schools, both of which rely heavily on reward for correct responses in developing reading, language and mathematics skills.

The skills to be learned are determined by the teacher or program developer and the sequence in which they are taught is also determined by sources outside the child. Sometimes a form of individual pacing is built into the program so that the child can vary the time taken to proceed through the series of small steps that add up to the learning of complex skills like reading, communication or problem-solving.

From the perspective of the open framework approach to programming, this belief that everybody follows a similar path involving similar activities but maybe at different rates, ignores the complexity of human learning.

Marie Clay is quoted earlier in this paper as saying that her observations indicate that children learn on many levels of complexity at the one time. The notion of cycles in learning where children move from random exploration, to skill development, to practise and then on to discovery suggests also that children will respond to learning tasks differently at different times in this cycle. This cuts across the notion of children slowly advancing in linear fashion from simple to complex; with or without an external reward system.

b) Organising subject-matter to be taught and learned in schools has occupied much of the time of curriculum designers, resource developers and school staff over the years, yet there is little agreement about what method of sequencing is most effective. For a time Bruner's theory, in which key ideas from a discipline or area of knowledge were to be presented to children in gradually more sophisticated forms, seemed to offer a solution to the difficulty of matching child abilities with school expectations. In some subject areas, notably social studies[16] Bruner's theory has had a measure of success but in many other areas the structure of the

discipline seems to have eluded the curriculum developers. Yet the notion of imposing a structure on an area of knowledge by concentrating attention on main ideas[17] continues to occupy the attention of resource developers, and is succeeding in weaning many teachers away from concentrating their teaching on discrete or maybe even disconnected facts, onto considering the meanings that children derive from the experiences provided.

c) The Schools Council Curriculum Project, Science 5-13, is one of a number of curriculum projects related to a specific subject-area, that has attempted to mesh together what is known about developmental sequence, with a defined structure for a subject[18]. In this project, the Piagetian view of cognitive development has been used as a guide to sequencing objectives which are congruent with the stage of development the child has reached. These objectives (150 of them) are arranged in sets within eight broad aims designed to promote the goal of "developing an enquiring mind and a scientific approach to problems".

The desire to make subject-matter more accessible to children, by reintroducing key ideas in gradually more sophisticated forms, and by relating subject-matter with what is known of developmental sequence, has led to the production of resources that are of assistance to the teacher operating a child initiative/teacher initiative program. They help the teacher to organise the environment to promote certain types of learning, sometimes they even help her integrate more than one subject-area in a learning activity, but they do not help with the task of observing and analysing individual children so as to know what materials, activities or ideas to select at any particular time.

d) Another approach to program sequencing that is more familiar at the pre-school level than at the primary school level, is to use developmental theory and developmental norms to decide what would be appropriate interactions with materials and people at different age levels. This approach was popularised by Gesell in the 1920's, and has undergone a resurgence of interest since the implications of Piaget's theory have been used for determining "appropriate" interactions for cognitive development.

The developmental approach sequences activities according to what is known about order in child development. For instance, the High/Scope Educational Research Foundation has developed a series of "Key Experiences" for children aged 3 years to 13 years, which are designed to help the teacher offer a developmentally-sequenced range of experiences that children need to engage in for optimum cognitive development.

Knowledge of child development provides the teacher with criteria for judging whether any given set of curriculum materials is appropriate to the developmental level of the children to whom it is being presented. Programs that sequence activities according to developmental theories or developmental norms help the teacher with this task, however

they do not take the place of observation and analysis, which the teacher must use to determine individual growth within a program. Where program goals differ from those devised for instance, by the High/Scope Educational Research Foundation, the developmental (motivational) sequence is likely to differ in significant ways from the sequence in educational growth that occurs within a particular program.

e) Teachers wishing to develop a program where child initiative is emphasised equally with teacher initiative will find that they need to develop their own observation and analysis skills and build up knowledge of broad sequence patterns that children go through in their program. By relying too heavily on resources developed by others there is a danger that the teacher will come to view those sequences as more real than the children for whom they are planning. This applies whether the focus of sequencing lies outside the child, for instance on daily living skills or on subject-matter, or is related to the maturational sequences involved in development. Sequencing in a child initiative/teacher initiative program involves both societal concerns and child concerns, as Dewey suggests:

> *"Abandon the notion of subject-matter as something fixed and ready-made in itself, outside the child's experience; cease thinking of the child's experience as also something hard and fast; see it as something fluent, embryonic, vital; and we realize that the child and the curriculum are simply two limits which define a single process".* (19)

3. The Child Initiative/Teacher Initiative Program:

Teachers using the open framework approach need a way of thinking about educational goals that allows the opportunity for both child initiative and teacher initiative. Stating educational goals in terms of broad areas of growth such as "communicating effectively", is one way to allow the teacher this flexibility, this dual role. Broad areas of growth imply directions in which to help children move, but do not imply endpoints or specific pathways that children must follow.

In this style of programming child interests, disciplines of knowledge, daily living skills and developmental sequences all influence planning for educational growth; the teacher has the dual role of responding to and extending child interests whilst initiating interactions that stimulate educational growth, that is growth related to the goals of the program.

The ideas of sequence in learning and of what should be learned are incorporated in the concept of "growth areas". The term allows you to translate values and program goals into behaviours that children exhibit and that can be observed. In this way the focus is on the child but on the child growing in directions laid down for the program.

"The concept of 'growth areas' incorporates an assumption that children have individual learning patterns, where a particular experience,

task or activity will be a 'key experience' for one child but not for another.

'Growth' as it is used here can be likened to a river - a river always moves in one direction from source to mouth; at the moment that a spring gushes up in some mountain, no one can predict just how that river is going to get to the sea; in part the bed will be the result of environmental pressures, in part, the strength of the original water flow. What we do know is that direction is always one way and at certain points along the way some particular thing that happens in the environment has a radical effect on the direction from then on. In a drought, one small boulder may obstruct movement to the extent that the bed moves in a long, circuitous route across the countryside, in flood conditions that boulder will be swept aside. Individual growth patterns are like the forming river.

When we think in terms of growth areas, teaching activities differ slightly for the teacher cannot plan detailed sequential lists to guide day-to-day activities; she must have available information about broad areas of sequence in a given type of environment, and rely more heavily on observing and analysing to see how to help individuals move through these broad sequences in growth (see Marie Clay, page 1). Syllabus guides and textbooks will be used slightly differently, as guides to broad sequences, sources of possible ways to provide key experiences and check points for forming expectations about levels children might be expected to reach". (20)

Children can be expected to progress at different rates, following different sets of interest, however, there will be a direction in educational growth, with characteristic landmarks along the way. For instance the High/Scope Educational Research Foundation indicates the following characteristic sequence in the development of writing abilities at the pre-operational stage in an open framework program:

Dictating
Tracing
Copying
Writing descriptive labels
Writes short sentences
Seeks spelling help .....

Focusing on growth ensures that the whole child is observed; concerns about knowledge, skills development and interest are part of the analysis phase of working with individuals; and planning involves a concern for the whole child again.

4. Developing Your Own Guides to Sequence in Educational Growth - a Tentative Program:

(a) Train yourself to observe as accurately as possible, the child interacting with various aspects of the environment. Note those interactions that are related to the growth areas of your program.

Keep a record of these observations over a six month period.

(b) Analyse each observation making reference to the content of Topics A and B and to the components of the growth areas chosen for your program. (For an example see Appendix).

The depth of the analysis will depend on the teacher's own development as well as the extent to which the child's progress is puzzling the teacher.

(c) Note the action taken to promote further educational growth.

(d) After a six month period, review the records for each child. Compare the information you have, to work out broad sequences of growth related to your program. This indication of characteristic sequence in growth can become a guide for you with later programming and can be shared with other teachers, when they are interested in developing their own guides.

Additional Reading:

1. Harlen, W.; Darwin, A.; Murphy, M.: Match and Mismatch. (1977, Oliver and Boyd, for the Schools Council).

This project aims to help teachers match learning experiences to development in the various skills, concepts and attitudes involved in a program. Although the project is specifically related to the teaching of science in primary schools, it has wider applicability. It touches on many of the concerns of the teacher developing an open framework program.

Recommended books: Match and Mismatch: Raising Questions - Leaders Guide. (Topics for in-service study)

Match and Mismatch: Finding Answers.

Recommended audio-visual aids: set of 5 audio-tape sequences. (available from Department of Education Library).

2. Clay, Marie: What Did I Write? (1976, Heinemann Educational, Auckland, N.Z.).

References:

1. Halliwell, G.L.: An Interactional Model for Early Childhood Education, 1977, Queensland Department of Education.

2. Readings II, Card 2, in Section 1, Open Framework Resource Kit, 1979.

3. Halliwell, ibid: a : p 10.

4. Halliwell, G.L. (ed): Open Framework Approaches to Developing Programs for Early Childhood Education, 1977, Queensland Department of Education, p 17.

5. Halliwell, G.L.: ibid: a : p 20-21.

6. Hodgkin, R.A.: Born Curious: New Perspectives in Educational Theory, 1976, John Wiley, London, p 43-49.

7. Hunt, J. McVicker: Intelligence and Experience, 1961, Ronald Press, New York, p 280.

8. High/Scope Educational Research Foundation: The Young Child in Action, 1979, Key Experiences for the Elementary Grades, 1977.

9. Havighurst, R.J.: Developmental Tasks and Education, 3rd edition, 1974, David McKay, New York.

10. Clay, M.M.: What Did I Write? 1975, Heinemann Educational, Auckland, p 19.

11. Halliwell, G.L.(ed): ibid : b : p 6.

12. Clay: ibid :

13. Elkind, D: Child Development and Education, 1976, Oxford University Press, New York, p 229.

14. Cohen, D.H.: What is a Good Pre-Kindergarten Program? 1968, Albany, New York (address given at State Conference on Pre-Kindergarten Education).

15. Clyde, M.: "Curriculum Development in the Early Years" in Australian Journal of Early Childhood, Vol 2, No 3, September 1977.

16. See for example the Syllabus in Social Studies for Primary Schools, Queensland Department of Education.

17. See for example the Draft Health Education Curriculum Guide, Years 1-7, Queensland Department of Education.

18. Sockett, H.: Designing the Curriculum, 1976, Open Books, London, p 52-54.

19. Dewey, J.: The Child and the Curriculum, 1971, University of Chicago Press, p 11 (originally published 1902).

20. Readings II, Open Framework Resource Kit, p 15.

APPENDIX

An exploration of the parameters of the growth areas selected to promote the goals of the Queensland Interactional Curriculum - An Open Framework.

Planning key educational experiences that lead to growth in

Acting independently
Problem solving
Social Communication
Self expression

It is the intention of this curriculum that children will show increasing mastery and satisfaction in these areas. This will involve acquiring physical, socio-emotional and cognitive skills in the subject disciplines of music and movement, art, social and physical sciences, mathematics, language arts and health.

ACTING INDEPENDENTLY: This includes the young child's ability to make decisions for himself, to plan and carry out activities using physical, socio-emotional and cognitive skills, to co-operative with others; to understand the implications of his own actions.

The environment should be planned to allow many opportunities for the child to choose, co-operate, experiment and make decisions.

The teacher plans, on the basis of observation and analysis of a child's behaviour, for experiences which challenge a child to act independently at physical, socio-emotional and cognitive levels.

Some of the parameters of this growth area might be:

- Making plans and carrying them out
- Caring for personal belongings
- Working independently on tasks
- Looking after equipment and using it appropriately
- Finding out information through inquiry from media resources and resource persons
- Accepting responsibility for own actions
- Handling living things with care
- Persisting when faced with difficulties
- Mastering motor and perceptional skills necessary for successful functioning in the educational setting
- Co-operating with others for the purpose of achieving satisfactory group living
- Evaluating own experiences in terms of satisfaction and mastery.

PROBLEM SOLVING: The young child uses physical, socio-emotional and cognitive skills in problem-solving situations, for the problems that interest him most involve interaction with objects and people.

The environment which encourages growth in problem solving ability will provide opportunities for classifying, seriating, observing relationships and experimenting.

Planned experiences for specific children will aim to challenge the child to solve problems using manipulative skills, social skills and reasoning ability.

Some of the parameters of this growth area might be:

- Using mathematical concepts in solving problems
- Using science concepts in solving problems
- Using general knowledge in solving problems
- Using inference in solving problems
- Using divergent thinking in solving problems
- Using convergent thinking in solving problems
- Solving personally-defined problems
- Solving teacher-defined problems
- Using skills/techniques already learned to solve problems
- Developing skills/techniques to solve problems
- Classifying and seriating objects and events
- Observing accurately in the physical and social environment
- Hypothesising and experimenting to acquire knowledge about the physical world.

SOCIAL COMMUNICATION: Young children need to have some knowledge of, and ability to use, cultural knowledge if they are to understand what others are saying to them, and to communicate their ideas to others.

The environment which promotes communication will provide opportunities for children to use oral and written language, to listen to and understand others, to find out about the language of mathematics, the conventions of written expression, the methods of science, and art and music.

Planned experiences for specific children will aim to increase the need for the child to use cultural knowledge in satisfying ways.

Some of the parameters of this growth area might be:

- Acquiring the techniques of music/movement (eg. singing, dancing, playing instruments)
- Acquiring art forms (eg. paint, pencil, print, collage, construction)

- Acquiring the techniques of drama
- Playing/working co-operatively with others
- Playing/working in small group settings
- Working in teacher-directed large groups
- Using books/cassettes/film strips
- Locating information in a library/reference books
- Using the conventions of written language (eg. alphabet, word order, page order)
- Using speech as a communication tool
- Writing to communicate
- Using mathematical conventions (eg. number names, number operations, sets, measuring, graphs) to communicate logico-mathematical ideas
- Finding out about the processes and language of science (eg. hypothesising, experimenting, observing)
- Acquiring physical skills (eg. fine motor, games, skipping, jumping, athletics, gymnastics) and using them in social situations.

SELF-EXPRESSION: The child who has discovered a broad range of means for creative expression is more likely to find satisfying ways of expressing self.

The environment which promotes self-expression will provide opportunities for representing experience through dramatic play, mime, song, dance, large body movement, speaking, drawing, writing and constructing.

Planned experiences for individual children will encourage them to use a variety of ways for creating.

Some of the parameters of this growth area might be:

- Creating with music/movement (listening, moving, playing, creating)
- Experimenting with art forms
- Using drama to express thoughts, ideas and feelings
- Using perceptual skills to seek information
- Seeking information from books, cassettes, libraries
- Seeking information from other people including adults
- Using speech to express own feelings and ideas
- Using written language to express own feelings and ideas
- Seeking out mathematical relationships (seriating, classifying)
- Using physical skills in dramatic play
- Representing own experiences using a variety of modes of expression, including drawing, painting, collage, printing, clay modelling, three dimensional construction, movement with mime.